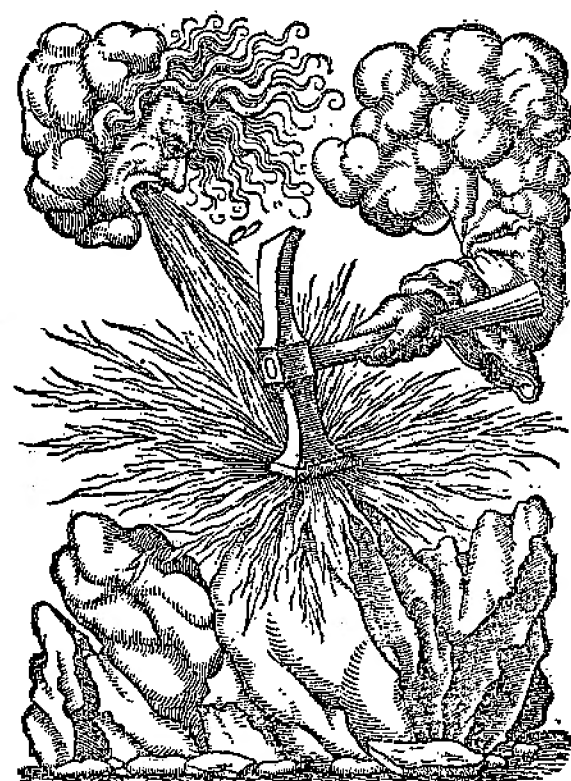


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12. PROCOPIUS. *History of the Wars*. Books 1 and 2, Greek text with English trans. by Dewing, H. B., London, 1914, 1: 453-457.
13. Translated from Ar-Razi's Treatise on Smallpox and Measles. Arabic edition of the Syrian Protestant College, Beirut, Syria, 1872, p. 6.
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 17. GREENHILL, W. A. Translation of Ar-Razi's Treatise on Smallpox and Measles for the Sydenham Society, London, 1848, p. 30.
- Because the introduction of Ar-Razi's conception of the circulation of the blood may be opposed, the writer, whose native language is Arabic, has chosen in this instance to retain the excellent translation by William Alexander Greenhill.
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A TREATISE ON THE BEZOAR STONE

BY THE LATE MAHMUD BIN MASUD THE IMAD-UL-DIN THE PHYSICIAN
OF ISPAHAN

Translated from the Original Persian

By CYRIL ELGOOD, M.D.

FLORENCE, ITALY

OF the many gifts of Persian science to European medicine the history of few is more interesting than that of the bezoar stone. The very name in the English language is a corruption of the Persian word Padzahr, showing that it is to the Persians that Europe was indebted for the knowledge of this wonderful antidote.

It is strange that on a subject of such value as an universal antidote there is so little literature. Adams in his appendix on "Substances introduced into Materia Medica by the Arabians" complains that he can find no "Arabian work" (by which presumably he means Persian or Arabic) on the subject, excepting the book of Ibn Ul-Baytar, and "his account is very indistinct and unsatisfactory."¹

Although the great majority of the medical writers of the Persian School of Medicine briefly describe the action of the stone and several give a description of the various kinds that are employed, yet this complaint is just. I, therefore, present the following treatise which I believe to be the earliest work entirely devoted to the subject. Though adding but little to what is scattered through earlier writers on the subject, it is to be

tory spurious stones were manufactured. It is, therefore, necessary at the outset to classify stones into true and artificial. The true stone was a natural calculus, though Persian writers are at times prepared to admit as genuine the vegetable and mineral bezoar stones, which it would be more just to classify as artificial. The genuine stone appears to have been a calculus found in the belly of a wild goat that inhabited the northeast corner of Persia. The belly must be understood to include both stomach and gall bladder—Persian writers themselves are undecided which organ was the true source, but definitely exclude the urinary bladder. The artificial stones were an artefact of wax and herbs.

This stone, whether taken internally or used externally, was held to be an antidote against the bites of snakes, all venomous insects, and the majority of vegetable and mineral poisons. Its curative effect was later extended to include plague, epilepsy, smallpox, and certain fevers, for all of which it was held to be a specific. So universal was its application that by the seventeenth century Persian writers use the word "padzahr" to mean "antidote" in general, and use

treatise here presented asserts that the Greeks had knowledge of it. But I can find no confirmation of this. That it was used in the East before the preaching of Islam would seem sure. It is stated that it was known to the Hebrews of ancient times, who termed it *Bel Zaard*, which means "the master."²

But the impetus to its general use was supplied by the physicians of the Arab School of medicine. Mahomed ibn Zakariyya Al-Razi (Rhazes) (850-932 A.D.) mentions the stone both in his "Continens" and in his "Al-Mansuri." An old English translation of this latter passage runs:

The evill Venoms that doe offende the heart and woorke their effects, O how little profite doeth any cure prove in them, if the Bezoar be not taken, for that doeth resist it. Moreover I myself saw that it did resist the venome called Napelo which is the venome that doeth penetrate more than al venoms.³

Ali ibn Ul-Abbas (Haly Abbas), who flourished in the second half of the tenth century, speaks about the stone in his *Kitab-ul-Maliki* (or *Liber Regius*), and Abu Ali ibn Sina (Avicenna) (980-1037 A.D.) in his "Canon of Medicine" makes several passing references to its efficacy.

The first reference to the stone in European scientific literature would appear to be in a work of Avenzoar, an Arab physician of Seville, about the year 1140 A.D. Later, Nicholas Monardes devoted a long account to the virtues of the stone and recounts that one of the Edwards was cured by the use of the stone

in a battaile that they fought beyonde the seas neare to the Citie of Aaron. When hee was almost dead, there was given to him the Bezaar Stone by one who was the greate maister of the Templers, which was an order in those daies of great estimation, and verie riche.⁴

In England the stone was so highly prized that Queen Elizabeth carried one set in a ring upon her finger; and it figured in the London pharmacopeias from 1618 to 1746. As late as 1808 Fateh Ali Shah sent some prized specimens to the Emperor Napoleon I, as a friendly offering of one of his most valued possessions. But the Emperor threw them with scorn into the fire.

To return to Persia once more. The court of Shah Abbas and his successors, so prolific in pharmacological treatises, produced many handbooks dedicated to an exposition of the action and usage of the bezoar stone. The earliest that I have discovered are the "Alfaz-ul-Advia" (or Vocabulary of Drugs) by Nur-ul-Din Mahomed, the "Ain-ul-Mulk," of Shiraz, written in 1628,⁵ the "Risala-i-Padzahr" (or Handbook of Bezoars) of Mirza Qazi bin Kashaf-ul-Din Hamawi of Yezd, written about 1650,⁶ and the "Tuhfah-i-Sulimani" (or Gift of Solomon) of Mahomed Kazim Teherani written in 1668.⁷ But prior to all these, and presumably the prototype upon which they were modelled, is the treatise which is here presented, which was composed by Hakim Imad-ul-Din Mahmud ibn Masud bin Mahmud. The treatise is undated, but must have been composed during the latter half of the sixteenth century, at

or syphilis* so he would appear to have been the first to have made a serious study of this reputed antidote. Further reading in the libraries of Europe (places far better for the study of Persian than Persia itself) allow me to add to the brief notes that I there made about the author and his works, when I presented his monograph on *Atishak*. I wish to modify some of the statements I there made.

In the first place it is possible to date his writings more accurately. He was apparently a contemporary with one Nur Ullah Ala-ul-Din. For Nur Ullah in his work on "The China Root" quotes with approval Imad-ul-Din. On the other hand, Imad-ul-Din in his own work on the China root quotes verbatim the first eighty lines from Nur Ullah's work on the subject. Now, Nur Ullah states in his pamphlet that he first became interested in the question of China root in the year 1540 A.D. Again, Kashaf-ul-Din Hamawi states in his work on the bezoar stone that he made his studies under Imad-ul-Din and we know that Hamawi died in 1664. If, then, Hamawi died in his eightieth year (a later is not likely) and began to study medicine in his tenth (an earlier is not probable) and Imad-ul-Din died very soon after this, the earliest date for his death would appear to be about 1600 A.D. And in view of Nur Ullah's statements we must date his birth about 1520. For the moment a more accurate statement is impossible.

In the second place, I now know that the *Tahfat-ul-Sadiyeh*, which

Mahmud bin Masud, who bore the title of Qutab-ul-Din and who flourished 300 years earlier. The similarity of the names and the fact that both had an uncle of the name of Kamal-ul-Din, the Physician, led me into this error. Further reading of the manuscript has shown me that the writer speaks there of Qalaun as the reigning Sultan of Egypt, and Qalaun reigned from 1279 to 1290 A.D. And in the second place, there is other evidence to show that a Mahmud bin Masud, a physician, accompanied by an uncle, also a physician, did go to Egypt about 1280 on an embassy from the Shah of Persia. The story of Imad-ul-Din's wanderings to Baghdad, Constantinople, and Egypt in search of medical lore, as well as his ophthalmic appointment in Shiraz, being derived from the *Tahfat-ul-Sadiyeh*, must, I regret, be ascribed to his earlier namesake.*

On the same page I stated that at Meshed Imad-ul-Din became "personal physician to Prince Ali ibn Musa ul-Reza, the Governor." My learned Persian friend Doctor Saeed Kurdistanian has pointed out to me that this is not the name of a governor of Meshed, but the name of the Saint who is buried there and that the Persian phrase should properly be interpreted "physician attached to the shrine of Our Lord Ali ibn Musa Al-Reza." He refers to the Saint again on page 467 of the translation. The word that I translate as "friendship" should there be rendered as "service."

Finally, in the light of these correc-

1. Al-Markibat-ul-Shahiyeh (Royal Prescriptions). His only surviving work that is written in Arabic.
2. Risala-i-Yanbu fi Ilm-il-Tibb (Rivulets in the Healing Art).
3. A Treatise on the Beneficial and Injurious Properties of Opium.
4. A Treatise on the China Root.
5. A Treatise on the Bezoar Stone, the subject of the present paper.
6. Risala-i-Mujarrabat (The Handbook of Experience).
7. Nuskha-i-Badal-i-Afyun (Prescriptions of Substitutes for Opium).
8. Dar Biyan-i-Baz Tarakib (A Second Volume of Prescriptions).
9. A Fragment on Pharmacy.
10. A Treatise on Anatomy. And
11. Risala-i-Atishak (A Treatise on Syphilis).

With regard to the manuscripts of this work I only know of two. One is in the British Museum, London, and is numbered A.D. 19619 Foll. 310 et seq. It is dated A.H. 1103 (= A.D. 1692). The other is in my private possession and is undated. From the style I am inclined to assign it to the same period as the Museum copy. Both texts are hopelessly corrupt. Thus, the Museum Ms. contains the sentence "The bigger Stone is a water-lily (nilufar)," which is nonsense until compared with my text which runs "The bigger the Stone the better (nikutar)." Again, my Ms. has "hairs resembling alum (shab-i-Yamani)," whilst the Museum copy reads "hairs resembling the back of a fish (pusht-i-mahi)," which at least is better sense.

Again, several passages are given at

passages and to link together the text of kindred subjects, which are separated in the original by what I imagine to be a later writer's interpolation.

I am, however, inclined to think that the passage on page 78 beginning "For it is to be found in Hindustan" as far as "obtained from mountain goats" is an interpolation by some Indian scribe. In the first place, the whole passage is missing in my Ms. In the second place, it describes the weight of the stone in tolas, an Indian, not a Persian weight, a system of weights and measures that the author Imad-ul-Din uses nowhere else. And thirdly, the value of the stone is quoted in a coinage unknown to the Persians, so that the writer feels himself obliged to translate the word. The finding of a contemporary Ms. is highly desirable for a knowledge of exactly what Imad-ul-Din did write.

It is not without interest to note that the bezoar stone is still in use in Persia today, though it is valued among the educated more as a curiosity than as a drug. A fair-sized stone was once presented to me by a grateful patient; but the cupidity of my dispensary servant overcame his respect for his master's goods, and the stone, together with a quantity of saffron in which it was carefully preserved, disappeared during one of my absences from Teheran.

REFERENCES

1. ADAMS. The Seven Books of Paulus Aegineta. London, 1847, pp. 426 and 427.

5. The Vocabulary of Drugs. Text and English translation by Francis Gladwin. Calcutta, 1793.
6. The Ms. is in the State Library at Leipzig. No. 267. foll. 68-78.
7. The Ms. is in the India Office, London, No. 2336 foll. 184-282.

A TREATISE ON THE BEZOAR STONE BY THE LATE DOCTOR IMAD-UL-DIN (AND MAY GOD HAVE MERCY UPON HIS SOUL)—

In the Treatment of Hippocrates it is related that a certain substance is brought from Fars to which has been given the name of Hajarul-Tis or Goat Stone.¹ It is a product of the hills and desert. It has a milky appearance and is neither rough nor smooth. When split open, it is found to be a series of skins or layers, like an onion. Within the innermost skin instead of a kernel, is a piece of green grass around which the skins and layers have been wrapped, as it were. This is known as a Grass Bezoar Stone.

ACTION OF THE STONE

If the Stone is ground up with an infusion of fennel and applied to the sites of poisonous bites, at once the pain is relieved and the poison is extracted. I myself once saw a man who had been bitten by a hornet. The site of the sting swelled up and became very red. A little of this Bezoar Stone was ground up with water and applied to the sting. At once, wherever the effects of the ointment reached, the natural colour was restored and the swelling subsided. There is, too, the story of some generals, who were summoned to a conference during the war and there saw a man who had been bitten by a snake. Since it was a time of war and they had at hand none of the Great Theriacum, they dissolved in pure wine about six barley grains' weight of the Bezoar and gave it to the man, who

Other people say that the Bezoar is a kind of stone, similar to one that is made from wax, lime, and clay; for it obviously consists of three parts. When it is ground up in a mortar with saffron, it turns red, like drops of blood. If it is rubbed over the site of insect bites—and I include vipers, snakes, and scorpions—at once the pain is relieved. Kings value this stone immensely. This kind of stone, too, is called a Bezoar Stone. I myself have seen monarchs who have prepared a draught of the Stone and who have set it in the midst of precious jewels. Whenever anyone was stung by a hornet, they poured a little of the draught into some milk and after a little while gave it to the man, who had been stung, to drink. At the same time they rubbed the place of the bite with the Stone. After this the milk was vomited up and the body of the patient scarified. And at once he was relieved.

THE KHORASAN STONE

Some say that mention of the Bezoar Stone is found in the very earliest times, but that the ancients did not know its properties. They did, indeed, describe a stone found underground and relate that this stone was brought from Fars, which resembles the Bezoar in appearance and shape. But they used to make it into the haft of a knife and put it to no other purpose.

Some say that the best antidote is the Theriacum which the people of Khorasan have discovered. It is an antidote comparable to the Goat Stone and is called the Taryaq-i-Faruq-i-Tis or Theriacum of Goats. It looks like an acorn, being round and long, and is laminated. Within there is something which might be a kernel, but is merely a piece of wood or a seed. The colour of the Goat Stone is dust-coloured or blackish, inclined to be

STONES OF OTHER REGIONS

The author of the *Mufradat* (or *Medicamenta Simplicia*)² states that the Bezoar Stone is taken from Khorasan alone; though this is not correct. Others state that the only place in which it can be found is Shabankarah and nowhere else.³ This, too, is incorrect. For it is to be found in Hindustan, in Golconda, in several parts of the Deccan, and above all in Kanpura and the surrounding district. The Bezoar Stone of these parts frequently will weigh three or four tolas; as they do also in the province of Warankul. The majority of the sheep of those parts contain a specimen, which they export to Europe, China, and to Malacca.

In China there is a Stone derived from monkeys, the very kernel of which may weigh four or five tolas. One of these was bought for 500 shamuns,⁴ which is the equivalent of 30 Persian tumans, and sold in the royal court. The buyer encrusted it in jewels. Another kind is the Stone from a cow, which is found in the Deccan. This is usually round and of little value. The Deccan Stone, besides being found encircling a twig, may also have as its core a tamarind seed or a bead, or even a piece of pottery or stone. The sheep are really a species of goat, which live in the desert or the hills. Similarly the Stones of Shabankarah are obtained from mountain goats.

The son of the author of the *Mufradat* in his marginal commentary writes "When my father in his *Mafradat* says that the Bezoar Stone can be brought only from Khorasan, he was speaking metaphorically; as were his remarks that Shabankarah is the only place in the world where it can be found⁵ . . . and there also it can be found. The people of Shabankarah say that around their town there is some wood which has the proper-

in their bellies. And hence this type of Bezoar Stone is called a Natural Theriacum. Some believe that it is found in the Gall Bladder; but this is a mistake. The truth is that it is found in the ventricle of the goat. In any case, it is extremely rare and is sent away in every direction.

Some say that, when it is ground up, it may turn green or red or even yellow, and that these are called "the black colours," and that it is better when it is black or reddish.

In Syria they manufacture from lac something which resembles the Stone, so that even the learned find it difficult to distinguish the one from the other. The test is to heat a needle red-hot in a flame and to place it on the Stone. If it is an artificial Stone, as the needle sinks in, it will give out a black smoke; if it is a genuine Bezoar Stone, the smoke is yellow and the tip of the needle, too, will turn yellow.

I have also heard that it is found in the region of Kerman and that the Kerman stone is more muddy-coloured than the Shanbankarah Stone.

WEIGHT OF THE STONE

The weight, too, is a subject of dispute. I have seen them varying from a single grain to twenty miscals. The bigger they are the better. It is well-known that a little one may resemble the pip of a grape and that the weights may vary from a grain to twenty miscals and then not be complete. But this is of no importance; for great or small, whichever excels in its essence, is the best ([Marginal note.] I, Khalil, the physician, once saw one that weighed 30 miscals; the owner said that it was obtained from a cow. And God is omniscient).

DOSAGE

The dose of the Stone for one bitten.

all illnesses and poisons. It is good, too, for hot temperaments, because it produces its effects by its properties and not by its constitution. For its constitution is exceeding hot. Anyone who wishes to make a practice of eating the Bezoar Stone ought to omit the drug on two days in each week.

A METHOD OF EATING THE BEZOAR STONE

Some have shown that the Stone, when eaten, should not touch the teeth, for it causes the teeth to break. The right way to take it is first to cleanse the stomach and body of humours, and then after a rest of three days to grind up every day two grains in milk or rose-water, so that after three days six grains will have been taken. A good hour later a draught of sugar and rose-water should be taken; and then about noon some pulse-water and bread may be eaten. The patient should after this avoid milk dishes, all bitter foods, and all that gives rise to obstruction.

ANOTHER METHOD

Take some Ethiopian aloes wood, a precious ruby, mastich, white ambergris, pure musk, gold and silver leaf, and white bamboo concretions. Grind up the drugs and put them through a sieve. Grind up the Bezoar Stone and the ruby, and mix them with the juice of a sugar-cane. Divide this into three portions and eat one portion each day. Then proceed as above.

Anyone who observes this method of taking the Stone at the beginning of the Spring and at the beginning of the Autumn, above all anyone of middle or advanced age, will find that his Innate Heat becomes increased, his bodily powers multiplied, and he will become immune to many poisons. It is exceedingly good,

substance which resists the power of another substance and drives out its evil effects on account of some property which is found within it. In the second place, it is the name applied to a well-known stone, which by some inherent property drives out poisons, both hot and cold, whether taken by the mouth or hung round the neck.

Aristotle wrote that the Bezoar Stone may be of many colours. Some are yellow, some dust-coloured, some khaki, and some are whiteish. The best of all are the yellow, and next come the dust-coloured.⁷

Rhazes writes that the Bezoar Stone is a yellow stone, soft in essence, useless as a food, and very useful as an antidote; and that he himself had seen the great use and potency of the Bezoar in driving away the poisonous effects of aconite. The Stone that he saw was yellowish or white and had fine hairs, like the hairs on the back of a fish. In its resistance to aconite no drug, simple or compound, that he had ever seen, could rival it.⁸

Ahmed Yusuf writes that the Bezoar Stone is hot and that in its heat lies its power. If the heart of a man becomes weak from sorrow, let him eat the sixth of a misal and he will be helped and his heart strengthened. He writes also in his *Jami* that the animal which produces the Stone is the mountain goat. The properties of the Stone are so far superior to any other antidote that, if to-day half a grain of it be administered to a healthy man, no matter what deadly poison be given to him, he will receive no harm or damage therefrom. It produces no heat nor does it throw the humours together, in which respect it differs from the Mithridatic Theriacum and others. For it produces its effect by its own inherent qualities. Sometimes it is set in a gold

and run with water. To sip this sweat is very good for acrid fevers and for ophthalmia.

CONCLUSION

There is a stone which is brought from Khorasan and which is called the Bezoar Stone. There are also stones found in mines in the cities of China, India, and the West, which greatly resemble the Bezoar. But none of these have the properties and uses of the Bezoar. Among these are the Qanuri Stone and Marble. The genuine Bezoar Stone is a noble and precious stone. In a word, it is soft, but not excessively. This is noticeable to the touch. It may contain numerous fine hairs, all woven together. Its heat is not excessive. Its specific property is that it has the great power of being able to drive out all animal and vegetable poisons and cures the bites of animals. A weight of but twelve barley grains, powdered up and cooked and then swallowed, will drive out from the body all poison by way of the sweat and excretions, and will preserve from death. If a Stone is worked into a necklace or set in a ring and the wearer place it in his mouth and suck it after he has taken any poison, it will be very beneficial. Or, if the ring is rubbed over the place of the bite of a scorpion or flying insect or over anyone who has taken a poison, such as arsenic, or over wasp-stings, its use is evident. If it is powdered up and sprinkled over the place of the bite of any crawling insect, it draws out the poison. If the site of the bite has become infected before the remedy can be applied, even then, if the Bezoar Stone be drunk, the place will be made whole, the poison driven out, and the corrupt flesh renewed. If the sting of a scorpion be rubbed with the Stone, the

weight of two barley grains be ground up and mixed with water and then poured into the mouth of a viper or snake, it will die of suffocation.

Written by the hand of the humble Mahomed Ali bin Saadi Ali Al-Hussein, the Physician, whose sins may God forgive.

NOTES

1. As far as I am aware there is no mention of the bezoar stone in the extant works of Hippocrates. Doubtless the author refers to one of the apocryphal treatises of which many were in existence in medieval times.

2. The name "Mufradat" is a common one and it is impossible to say to which he refers. There is, however, in the library of the India Office, London, a work entitled "Mufradat Dar Ilm-i-tibb." The author is not named nor is it dated. In Part III, the fourth chapter is "On Stones, mineral and otherwise"; so that this may well be the work to which our author is referring.

3. Shabankara is the name of a village near Tus in Khorasan, north-east Persia. Mahomed bin Yusuf Al-Harawi in his *Bahr-ul-Jawahir* asserts that Shabankara is the only place where the genuine Stone can be obtained.

4. I am uncertain what this coin is which I transliterate Shamun. The manuscript at this point is badly written and strange words are very difficult to read.

5. I can make no sense of this passage.

6. The reference here is to the "Jami-ul-Fawaid" of Yusuf bin Mohamed of Herat. I have not discovered the passage in this book, which has been recently printed in Meshed, but the same statement is made in the "Bahr-ul-Jawahir," which is the work of his father. Yusuf, the son, wrote several other medical works, and died about the middle of the sixteenth century, being therefore an older contemporary with the author of this pamphlet.

7. Presumably a reference to the spurious "Stone Book."

8. A translation of a portion of this passage is in the introductory remarks.

ANCIENT MEDICINE IN MODERN PERSIA

By H. A. LICHTWARDT, M.D.

HAMADAN, PERSIA

SOARING above Persia's desert wastes in a swift Junker plane, and noting large auto-trucks rapidly conveying goods from the border towns to the interior, along quite passable roads accompanied by gleaming telegraph wires, one realizes that the ancient Persia, eloquently described by poet and prose-writer, has changed.

Teheran, and some of the other larger cities, have wide avenues lined by shops whose show-windows are filled with luxuries from various parts of the world. The old-fashioned, but ever picturesque costumes of ancient Persia are being rapidly supplanted by the twentieth century clothes of so-called civilization; clothes, which especially as concerns those for men, are as ugly, monotonous and uncomfortable as could be devised.

The Persian Parliament sitting in sessions more orderly and impressive than some of those reported from Washington or London, makes wise plans for the development of the educational system, amplifies the department of public health, and carefully plans a balanced national budget, for a land which many consider impoverished, but whose per capita national debt is far less than that of her European neighbors.

Lest the picture painted be too bright, or the impression conveyed be erroneous, one must leave the newly built motor roads, and on horseback, or afoot, go into the tiny villages

into the true native quarters, where progress is not evident, filth is prevalent and sanitation non-existent; one must ride out into the desert, where at a well, or at the side of a small stream, one may find Balooch tribesmen camping in their black, goat-hair tents, knowing nothing of modern civilization, and caring less. In all these places one soon realizes that there is still much of ancient Persia remaining.

Tens of thousands of villages have no doctor or medical care of any kind, and when a person becomes ill he first sends for the village mullah or priest, who may be the only literate man in this village of domed-top mud huts. This picturesque old man, with wrinkled but kind face, and long henna-dyed beard, sharpens his reed pen and writes a sympathetic prayer in Arabic, or an appropriate verse from the Koran. The paper containing this prayer or verse is then dipped in a glass of water, and the resulting inky solution-of-prayer is reverently drunk by the believing patient. Let us not scorn this ancient system of psychotherapy, based upon a rational faith in an omnipotent God and necessitated by an isolation from scientific medical assistance. There are many less scientific and less effective systems even in countries which consider themselves enlightened.

For definite diseases there are definite remedies; a person suffering from malaria will carefully shell eleven